

B/20-5 OPERATOR HANDBOOK

This publication defines operator responsibilities and provides general guidelines for performing B/20-5 operations and maintenance actions. It outlines requirements, defines terms, and provides guidance for preparation and submission of reports pertinent to B/20-5 operations. Specific instructions for each location are contained in the attachment. Any deviation from this publication will not be made without the prior approval of headquarters (HQ).

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5-i. CEN Form 5, Operational Log and Data Sheet

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Attachment

1. Responsibilities and Security (S) (Forwarded under separate cover.)

## Chapter 1

## GENERAL

## 1-1. Terms Defined:

- a. Parent Unit. Staff function responsible for the support required for equipment operations at a subordinate unit.
- b. Area Technician. Parent Unit individual assigned field maintenance duties on the B/20-5 equipment.
- c. Equipment Location (EL). A location where the B/20-5 is operated.
- d. Technical Instruction (TI). Depot publication containing technical information necessary to assemble, install, operate, and maintain the B/20-5. Unless otherwise noted, all references in this publication are to TI 3D-B/20-5-1.
- e. Laboratory Label. A three-digit number assigned to each location for data submission purposes. Individual laboratory labels are provided by the Parent Unit.
- f. Time. All times referred to in this publication and attachment are local times.

1-2. Julian Calendar. A Julian calendar immediately available in the area of the unit will aid in the completion of CEN Forms 5, Operational Log and Data Sheet. Submit requirements to the Parent Unit.

1-3. B/20-5 Equipment Malfunctions. Equipment problems will be reported via the Equipment Status Report in accordance with (IAW) Chapter 4.

1-4. Electrical Reporting During MINIMIZE. Communications crisis conditions are defined as periods of MINIMIZE. If this condition exists, continue to submit all electrically transmitted reports that are required by this publication.

1-5. Operator Identification. Every effort will be made to ensure two individuals at each location receive the formal B/20-5 training course, usually enroute to the new duty station. The unit commander may task other personnel to take daily readings and assume routine B/20-5 duties, provided they meet the criteria outlined in the attachment.

## 1-6. Operator Responsibilities:

- a. Operate and maintain the B/20-5 within parameters as outlined in this publication, applicable guides, and TIs.
- b. Advise the Parent Unit immediately of any problem concerning the equipment, supplies, operations, manning, etc., which may impact mission capability.
- c. Perform all scheduled Preventive Maintenance Routines (PMR) and unscheduled maintenance within local capabilities. The established PMR intervals will not be exceeded unless a waiver is first obtained from the Parent Unit.
- d. Request technical assistance as required to ensure timely performance of any scheduled or unscheduled maintenance.
- e. Ensure all sample run interruptions or conditions, which may affect unit production, are fully documented by Julian date and local time in the Remarks Section of the CEN Form 5.
- f. Advise the Parent Unit by message of the name, grade, current duty assignment, and anticipated arrival date of personnel scheduled to replace present B/20-5 operators.
- g. Inform the Parent Unit when Time Compliance Technical Instruction (TCTI) kits are received. Parent Units are responsible for the accomplishment of each TCTI.
- h. Annotate within the Remarks Section of the completed CEN Form 5 if the supply of CEN Form 5 falls below a two month level. The Parent Unit is responsible to ensure a resupply of forms to their locations.

- i. Maintain the supplies, special tools, and support equipment necessary to effectively perform the mission.
- j. Notify the Parent Unit, by message, if supply of sample containers falls below a 30-day level.
- k. Ensure all compressed gases are safely stored IAW applicable directives.

1-7. Maintenance Requirements:

a. Scheduled maintenance requiring the unit to be turned off will be accomplished at the completion of the sample run. The area technician may terminate the sample run at any time for scheduled maintenance. In addition, the sample run may be interrupted when it is obvious that immediate unscheduled maintenance is necessary to ensure sample collection or to eliminate a condition hazardous to life or equipment.

b. To keep outages to a minimum, temporary repairs are authorized as soon as a malfunction is discovered. However, repairs that alter the physical characteristics of the unit to such a degree that it cannot be returned to the original configuration will not be made unless approved by HQ.

1-8. Supply of Forms. Center forms prescribed by this publication will be provided by the Parent Unit or through established channels.

1-9. Documentation Disposition Instructions. AFR 12-50 contains disposition instructions for all documentation. Recommended disposition:

- a. CEN Form 5, Operational Log and Data Sheet. Identify on AF Form 80 as Source, Support, or Control Data IAW AFR 12-50, Table 11-1, Rule 4. Cut off and destroy after 3 months.
- b. Equipment Status Reports. Identify on AF Form 80 IAW AFR 12-50, Vol II, Table 66-10, Rule 5. Destroy when superseded, obsolete, or no longer needed for reference, or after 6 months, whichever is sooner.
- c. Outage Notification. Transitory material.
- d. Results Messages. Transitory material.

## Chapter 2

## OPERATING INSTRUCTIONS

2-1. Normal Operations. The start time and sample run schedule for each B/20-5 location is contained in the attachment. Permanent changes to this schedule must be approved by HQ prior to implementation.

2-2. Air Supply Requirements. The B/20-5 will normally operate on outside air through no more than 100 feet of 3/8 inch tubing. A waiver must be obtained from HQ for any unit to operate permanently on inside air. The unit will concentrate any gas or vapor having a boiling point higher than that of liquid oxygen. The unit should never be installed where the air may be appreciably contaminated with flammable gases or vapors, or solvent vapor. It must never be operated where it may take in vapors from metal or electric cleaning, floor wax, or paint spraying operations, or where acetylene is being used or generated.

## 2-3. Terms Defined:

a. Sample Isolation Period (SIP). The time during which the desired product is isolated into the sample container. The length of SIP will always be one hour.

b. Sample Collection. The time period from the start of the sample run to the start of SIP. Under normal operation, this period will be 23 hours for a 1-day run or 167 hours for a 7-day run.

c. Sample Run. The time period from unit start up until end of SIP. It consists of the sample collection period and the Sample Isolation Period and lasts 24 hours or multiples thereof up to 7 days. A sample run always ends at the completion of SIP.

(1) Daily sample runs will begin each day at the time designated in the Attachment and will end 24 hours later.

(2) Twice-weekly sample runs will begin each Monday and Thursday at the time designated in the Attachment and will end 72 and 96 hours later, respectively.

(3) Weekly sample runs will begin each Thursday (unless specifically authorized by HQ) at the time designated in the Attachment and will end 168 hours later.

2-4. Special Interest Periods. During specified time periods, HQ may alter the normal sample collection schedule and establish critical operating criteria for selected units. Parent Units will be notified by message listing the time frames and locations affected. This message will include any general requirements necessary during the period. Parent Units will in turn notify the affected locations. Every effort will be made to keep the equipment operational during these periods.

2-5. Periodic Readings and Equipment Checks. Although requirements for periodic readings and equipment checks are flexible, they are a necessary and integral part of a successful operation and should be made within 30 minutes of the same time each day. Once times are established, they should not be changed without Parent Unit approval.

a. Daily locations will record periodic equipment readings between 5 hours after the start of sample collection and before start of SIP each day. During nonduty days, the readings will be taken prior to the start of SIP if at all possible.

b. Weekly and bi-weekly locations will record periodic equipment readings 5 to 23 hours after the start of sample collection on the first day of the sample run, once each duty day thereafter, and before the start of SIP on day of sample container change. Weekend readings will be taken whenever possible; however, if the operator must make a special trip for this purpose, the weekend readings may be omitted.

c. Record a complete set of readings approximately 55 minutes into SIP once each week.

d. Record a set of readings immediately prior to any maintenance affecting sample integrity.

e. Record a set of readings between 5 hours after resuming normal operation and prior to entering SIP following an extended equipment outage.

**2-6. Sample Container Installation:**

a. Remove the plastic protective covers from the quick-disconnect fittings of the new container. Check the container pressure by inserting the hand-held pressure gauge into either quick-disconnect fitting. If the pressure is not at least 10 psig, use another sample container and return the defective container IAW paragraph 3-2d. Locations which do not receive direct shipments from Depot will return the defective containers to their Parent Unit.

b. If the sample container pressure is acceptable, disconnect the pressure gauge. Check the cleanliness of the quick-disconnects. Wipe off with a clean, dry, lint-free cloth only.

c. Mark the sample container IAW paragraph 3-2b.

d. While observing flowmeter SM6, attach the male quick-disconnect (attached to the flexible line) to the female connector (elbow side) of the sample container. If flowmeter SM6 indicates a momentary rise and fall, it is an indication of a leaking SSV6 which must be repaired or replaced. Notify the Parent Unit.

e. While observing flowmeter SM6 and gauge SM1, depress the Sample Reset Switch located behind the sample container. Note a momentary pulse of the flowmeter ball and gauge SM1. The red indicator lamp on the control module will illuminate and the green lamp will extinguish.

f. Attach the remaining quick-disconnect fitting.

**2-7. Sample Container Removal.** The sample container will be removed as soon as possible after SIP and no later than three hours after the completion of SIP.

a. Near the end of SIP, the red lamp on the control module will extinguish and the green lamp will illuminate. Two minutes later the coldhead will begin to operate. The sample container may then be removed.

b. Hold the sample container with one hand.

c. Lift up the red collar of the quick-disconnect fitting attached to the rigid line to release the connection.

d. Lift up on the red collar of the quick-disconnect fitting attached to the flexible hose to completely free the container.

e. Replace the plastic protective covers over the container quick-disconnect fittings.

f. Process the container for shipment to the laboratory IAW paragraph 3-3.

**2-8. Sample Recovery.** If outage in excess of 1 hour becomes necessary after the unit is 9 or more hours into the sample run, demand SIP to recover the sample and forward the container to the laboratory for processing. If the unit has not been operating for at least 9 hours, remove the container and return to depot maintenance or Parent Unit IAW paragraph 3-2d.**2-9. Shutdown Procedures.** A scheduled unit shutdown could occur anytime for many reasons (preventive or corrective maintenance, extended power loss, etc.). Perform the following for scheduled unit shutdown:

a. If possible, recover the sample prior to the scheduled shutdown by depressing the white Sample Isolation Switch at least 1 hour prior to the shutdown.

b. After SIP, remove the sample container.

c. Place the Main Power Circuit Breaker to the OFF position and place the Battery Selector Switch to the DISCONNECT position.

d. If the sample collection period exceeds 9 hours, forward the container for processing.

e. If the sample collection period was less than 9 hours, or if sample recovery was not possible prior to unit shutdown, remove the container and return it to Depot maintenance or Parent Unit IAW paragraph 3-2d.

2-10. Power Outage. Scheduled or unscheduled power outages may occur anytime during the sample run. Total outage and inclusive times, if known, will be recorded in the remarks section of CEN Form 5. The system logic is maintained by the battery and automatically compensates for short duration power failures. When a power failure occurs near the end of a sample run, system logic may extend the run beyond the normal SIP completion time. This will not affect the normal completion time for the next sample run. The following instructions apply for all types of outages:

- a. For scheduled power outages in excess of 1 hour:
  - (1) Shutdown the unit IAW paragraph 2-9.
  - (2) When power returns, restart IAW paragraph 2-11.
  - (3) Record all actions in the remarks section of CEN Form 5.
- b. For scheduled power outages of less than 1 hour and all unscheduled outages, when the power returns, record the inclusive times in the remarks section of CEN Form 5, if known. If the outage is more than 30 minutes, annotate the CEN Form 5 with coded comment 12 in blocks 77-78. No other action is required unless the Logic Power Failure Lamp comes on. If this does occur, depress the red Logic Reset Switch to extinguish the Logic Power Failure Lamp; depress the green System Reset Switch and then the Sample Reset Switch behind the bottle; and demand SIP at the regularly scheduled time.

2-11. Restart Procedures:

- a. Place the Main Power Circuit Breaker to the ON position.
- b. Place the Battery Selector Switch to the CONNECT position and depress the red Logic Power Reset Switch to extinguish the Logic Power Failure Lamp.
- c. Depress the green System Reset Switch.
- d. Check visually and audibly for normal unit operation.
- e. Install a sample container and depress Sample Reset Switch IAW paragraph 2-6.
- f. For stations on a daily sampling schedule:
  - (1) Record a set of readings between 5 hours after resuming normal operations and prior to the start of SIP.
  - (2) Demand SIP at the regularly scheduled time.
    - (a) If the sample collection period was less than 9 hours, identify the container and return it IAW paragraph 3-2d.
    - (b) If the sample collection period was 9 hours or more, mark and submit the container IAW paragraph 3-2c.
    - (c) Submit sample verification run IAW paragraph 2-12.
- g. For stations on other than daily sampling schedule:
  - (1) If sample quality is suspect due to maintenance or equipment malfunction:
    - (a) Set the Day Selector Switch to the 1-day position.
    - (b) Record a set of readings between 5 hours after resuming normal operation and prior to the start of the SIP.
    - (c) The following day, demand SIP at the regularly scheduled SIP time. If the sample collection period was less than 9 hours, return the container IAW paragraph 3-2d. If the sample collection period was 9 hours or more, submit the container IAW paragraph 3-2c.
    - (d) Perform and submit sample verification run IAW paragraph 2-12.
    - (e) Following the sample verification run, set the Day Selector Switch to the number of days required to return the unit to the normal sample run schedule.

(f) After SIP, return the Day Selector Switch to the normal setting.

(2) If sample quality is not suspect:

(a) Set the Day Selector Switch to the number of days required to return the unit to the normal sample run schedule.

(b) Record a set of readings between 5 hours after returning to normal operation and prior to the start of SIP.

(c) Demand SIP at the regularly scheduled SIP day and time.

(d) After SIP, return the Day Selector Switch to the normal setting.

2-12. Sample Verification Run:

a. One full 24-hour sample verification run is required following periods of maintenance or an equipment malfunction which causes sample integrity to be suspect. If a partial collection of at least 9 hours was made following unit restart and prior to the start of the full 24-hour verification run, it, too will be marked and submitted IAW paragraph 3-2c.

b. Locations may submit more than one full 24-hour verification run on an EXPEDITE basis as deemed necessary to verify proper equipment operation.

2-13. Hour Power Makeup. After restoration of power following outages of at least 5 minutes, the unit will enter Hour Power Makeup. The coldhead will operate but the sample air system is closed to incoming air for 1 hour. This allows the unit to once again reach operating temperatures and prevent further sample loss. After 1 hour, SM1 and SM6 will return to normal. If the power failure results in a lost logic condition (Logic Power Failure Lamp Lit), Hour Power Makeup may not occur.

## Chapter 3

## SAMPLE REQUIREMENTS

3-1. Sample Collection Requirements. The B/20-5 is designed to collect 7 cubic centimeters (cc) per day at a flow rate of 8.0-8.5 for sample runs of 4 days or less; and 4 cubic centimeters per day at a flow rate of 4.0-4.5 for 5-day to 7-day runs. The following guidelines are used to monitor unit performance. After any run with marginal or unusable results, the equipment should be kept under close supervision. Low results may indicate a need for maintenance.

LENGTH OF RUN IN DAYS	SATISFACTORY (MORE THAN)	MARGINAL	UNUSABLE (LESS THAN)
1	5cc	3 to 5 cc	3cc
2	10cc	3 to 10 cc	3cc
3	15cc	3 to 15 cc	3cc
4	15cc	3 to 15 cc	3cc
5	15cc	3 to 15 cc	3cc
6	15cc	3 to 15 cc	3cc
7	15cc	3 to 15 cc	3cc

## 3-2. Sample Container Identification:

a. Identify the new sample container prior to installation by placing a piece of 3/4-inch printable tape on the container and marking it with the sample identification data described below using a waterproof felt tip pen. Ballpoint pens or nonwaterproof felt tip markers should not be used as they tend to smear, making container identification data illegible. Also avoid using other types of tape, such as masking tape, or writing directly on the container as residual adhesive and felt tip markings are difficult to remove.

b. Routine sample identification data will be extracted from Section II of the CEN Form 5 and entered on the container tape in the following order: Block 3 (if entry is other than the preprinted 5); dash, Blocks 4-6; dash, Blocks 7-8; dash, Blocks 9-11; dash, Block 13; dash, Block 14 (if other than the preprinted G). For example, 800-86-123-7; or 800-86-123-7-T.

c. In addition to the routine sample identification data, containers sent to the laboratory for processing following equipment maintenance, or when equipment operation is suspect, will be marked as follows on separate pieces of printable tape:

(1) Type of maintenance performed (e.g., freon system, sample air system, column blockage, etc.).

(2) EXPEDITE.

d. Defective containers failing the initial pressure test, used during maintenance, or installed on the unit for less than 9 hours which are being returned to Depot maintenance, or the Parent Unit, will be marked with a piece of printable tape stating the reason for return (low pressure, maintenance, etc.).

## 3-3. Sample Container Shipment. After the sample run is complete and the sample container is removed, prepare the container for shipment as follows to the address listed in the Attachment:

a. Ensure the sample container serial number is recorded on the CEN Form 5.

b. Ensure the sample container mail date is recorded on the CEN Form 5.

c. Ensure the sample container is properly identified and the identification data tape matches the information on the accompanying CEN Form 5.

d. All sample containers will be sent priority mail. Ensure "PRIORITY MAIL" is stamped on the outer wrapping.

e. Ensure sample containers are prepared and forwarded IAW procedures in the attachment as soon as possible after removal from the unit. Sample containers will not be held on site but will be forwarded as often as local mail service permits.

3-4. Sample Results Reporting. B/20-5 sample results will be forwarded to each Parent Unit via the consolidated laboratory report. Parent Units will develop local procedures for disseminating sample data to each location based on individual requirements.

3-6. Production Effectiveness. Production effectiveness is computed monthly for each operational unit based on the quality and number of samples recovered and submitted for analysis. These figures will be used to determine the overall efficiency of the network and indicate individual areas in need of corrective action. The formula:

$$\frac{\text{Satisfactory sample days} + \text{Marginal sample days}}{\text{Total sample days for the month} - \text{LIP and PLIP}} = \text{Production Effectiveness}$$

## Chapter 4

## REPORTING EQUIPMENT MALFUNCTIONS

4-1. B/20-5 Equipment Status Reporting. Equipment malfunctions or suspected malfunctions will be reported via the electrically transmitted Equipment Status Report (ESR). ESRs are divided into three categories - initial, follow-up, and final - and are explained below. All sections of any ESR will be completed even if negative. All times will be local times reported in Julian date time groups, e.g. 188/1320L.

## 4-2. Initial Equipment Status Report.

a. Submit an initial ESR when a B/20-5 malfunction results in any of the following conditions:

- (1) The time of return to normal operation is unknown.
- (2) The time of return to normal operation will exceed 14 hours.
- (3) The equipment has been/is suspected of being inoperative for 14 hours or more.
- (4) The malfunction precludes the collection of a usable sample for a scheduled sampling period.

b. Submit the initial ESR via priority precedence to the Parent Unit in the following format. Consult the attachment for message address and classification.

FROM: LOCATION

TO: PARENT UNIT

APPROPRIATE CLASSIFICATION

SUBJ: B/20-5 EQUIPMENT STATUS REPORT - SITE NUMBER

A. JULIAN DATE/LOCAL TIME OF MALFUNCTION

B. TIME IN COMMISSION (TIC) OR ESTIMATED TIME IN COMMISSION (ETIC); SPECIFY TIC OR ETIC.

C. SPECIFIC ITEM OF EQUIPMENT THAT FAILED AND A FULL EXPLANATION OF MALFUNCTION. INCLUDE THE LAST SET OF NORMAL EQUIPMENT READINGS PRIOR TO THE FAILURE AND THE FIRST SET OF ABNORMAL EQUIPMENT READINGS FOLLOWING THE FAILURE.

D. CONCISE DESCRIPTION OF ALL CORRECTIVE ACTION TAKEN AND/OR PLANNED. IF THE MALFUNCTION HAS BEEN CORRECTED, DELAY THE REPORT TO INCLUDE A COMPLETE SET OF EQUIPMENT READINGS NO EARLIER THAN 5 HOURS AFTER RETURN TO OPERATION. IF THE FAILURE HAS NOT BEEN CORRECTED, AND/OR ADDITIONAL ASSISTANCE OR PARTS ARE REQUIRED, SEND THE REPORT IMMEDIATELY.

E. REMARKS (INCLUDE ANY ASSISTANCE REQUIRED).

## 4-3. Follow-up Equipment Status Report:

a. Use the follow-up ESR to update a continuing equipment problem for which corrective action may be delayed for any number of reasons. In most cases, the area technician will submit the follow-up ESR to provide an updated ETIC; to report major changes in the maintenance posture such as parts requisitions, failure of additional equipment, progress in repair efforts, etc.; or to report any pertinent information not available at the time of the initial ESR.

b. When an ETIC cannot be met, submit a follow-up ESR in sufficient time to arrive at the Parent Unit upon or before the ETIC expiration date, explaining the delay and updating the ETIC.

c. Submit the follow-up ESR via routine precedence to the Parent Unit using the following format:

FROM: LOCATION

TO: PARENT UNIT

APPROPRIATE CLASSIFICATION

SUBJ: B/20-5 FOLLOW-UP REPORT - SITE NUMBER

A. ETIC OR NEW ETIC

B. EXPLANATION OF CORRECTIVE ACTIONS TAKEN SINCE LAST REPORT AND ANY NEW ACTION PLANNED. INCLUDE PROBLEM AREAS ENCOUNTERED.

C. ANY OTHER INFORMATION CONSIDERED IMPORTANT AND NOT INCLUDED IN THE INITIAL ESR.

4-4. Final Equipment Status Report. Upon satisfactory resolution of the equipment problem and within 24 hours of return to normal operation, submit a final ESR via routine precedence to the Parent Unit. Do not send a final report when it would duplicate the initial report, e.g., when the TIC was given in the initial report.

FROM: LOCATION

TO: PARENT UNIT

APPROPRIATE CLASSIFICATION

SUBJ: B/20-5 FINAL REPORT - SITE NUMBER

A. TIC

B. EXPLANATION OF ACTIONS TAKEN TO CORRECT THE PROBLEM.

C. A COMPLETE SET OF EQUIPMENT READINGS BETWEEN FIVE HOURS AFTER RETURN TO NORMAL OPERATION AND START OF SIP.

4-5. Outage Notification. Submit an Outage Notification Message to the Parent Unit, info HQ, by routine precedence when equipment downtime in excess of 14 hours is anticipated for scheduled maintenance, power outages, severe weather, etc. Allow sufficient time for HQ response. Outage will not normally be taken prior to receipt of authorization. ESRs will be submitted when the outage occurs for periods exceeding 14 hours.

FROM: LOCATION

TO: PARENT UNIT

INFO: HQ

APPROPRIATE CLASSIFICATION

SUBJ: B/20-5 OUTAGE NOTIFICATION - SITE NUMBER

ESTIMATE EQUIPMENT OUTAGE FROM (JULIAN DATE AND LOCAL TIME) TO (JULIAN DATE AND LOCAL TIME) FOR (REASON FOR OUTAGE).

## Chapter 5

## CENTER FORM 5

5-1. CEN Form 5, Operational Log and Data Sheet. The CEN Form 5 is the key to interpreting the sample product collected and for coordinating laboratory, maintenance, and administrative functions associated with data processing. Each completed form should be accurate and legible and should fully explain the events surrounding the sample collection. After the sample run is completed, review the form for accuracy and distribute IAW paragraph 5-3. The CEN Form 5 will be completed as follows (see Figure 5-1):

a. Section I (Identification Data). Enter the unit, dewar, and coldhead serial numbers. Enter the date the sample container is mailed along with the registry number of the package, if applicable.

b. Section II (Data for Automation). Entries in this section are used as computer inputs and must be accurate. The following is an explanation of each block entry:

BLOCK	REQUIRED ENTRY
1	Preprinted.
3	Preprinted.
4-6	Enter the laboratory label provided by the Parent Unit.
7-8	Last two digits of calendar year in which sample run started.
9-11	Julian date sample run started.
13	Number of days constituting the sample run. Subtract the start date (Blocks 9-11) from the stop date (Blocks 32-34). Enter the result in this block.
14	Preprinted. Change to T for Depot test of rebuilt equipment; X for HQ-directed experiment; F for 2nd unit operating at same location.
18-21	Sample container serial number.
27-30	Local time sample run started. Normally this time will be the same as the SIP completion time of the previous sample run; but, may reflect a delay due to maintenance, power outage, etc.
32-34	Julian date sample run stopped.
36-39	Local time sample run stopped. The completion of SIP.
77-80	Coded comments. Enter a two-digit coded comment '12' when the unit is inoperative for 30 minutes or more during the sample run. This code will be used anytime equipment outage for any reason totals 30 minutes or more between the recorded run start and stop times.

## c. Section III (Periodic Readings):

(1) Date/Time. Enter the Julian date and local time readings are taken.

(2) Meter Readings. Front panel equipment readings.

(3) Ambient Temperature. Enter the reading of a thermometer placed near the unit but out of air streams.

(4) Visual Check. Enter "OK" in the visual check column to indicate there are no unusual noises or vibrations and all readings are within parameters, the green lamp is off, and the red lamp is on indicating the sample reset button was pushed when the sample container was changed.

(5) Initials. Enter the initials of the operator making the equipment check.

## d. Section IV (Remarks):

(1) The remarks section will include, but will not be limited to, the Julian date, local time, and reason for any outage. All abnormal operations and outages must be explained in this section. If the entries in Blocks 27-30 or Blocks 36-39 are other than normal times, an explanation is required. Routine maintenance including PMRs will be entered. Problems occurring during the sample run that could affect the sample will be listed by the Julian date/local time started and ended. How was the problem discovered? What was done to correct the problem? What parts were used? Following is an example of the entries required: "181/1645L-181/1755L, no flow or vacuum during operation check. \*Replaced vacuum pump and fuse. Pump sent to Depot." The Remarks Section should be a chronological history of occurrences and actions taken during the sample run. The part that caused the actual failure will be preceded by an asterisk.

(2) Routine and unscheduled maintenance performed after the sample run ends (completion of SIP) will be entered on the form for the next run.

(3) Report operator status in the Remarks Section of the last CEN Form 5 submitted each month. Include the name, grade, and anticipated date of reassignment of at least two operators - the primary operator and one other individual responsible for the B/20-5 operation and maintenance. Place an asterisk by the name(s) to identify personnel who have received formal training.

(4) Report container status in the Remarks Section of the last CEN Form 5 submitted each month. Note the number of serviceable containers on hand for use that day.

5-2. CEN Form 5 for Outage Periods. If a B/20-5 is inoperative and the sample container is not submitted for analysis, a CEN Form 5 will be completed for the outage period. Complete as follows and submit with the CEN Form 5 for the first sample run following the outage period (include the laboratory).

a. Section I (Identification Data). Enter the unit, dewar, and coldhead serial numbers. Leave the date sample mailed and registry number blocks blank.

## b. Section II (Data for Automation):

BLOCK	REQUIRED ENTRY
1	Preprinted.
3	Preprinted.
4-6	Enter the laboratory label provided by the Parent Unit.
7-8	Last two digits of calender year in which the outage period started.
9-11	Julian date the previous run ended for which the sample container was submitted for analysis.
13	Number of days constituting the outage period. Subtract the outage period start date (blocks 9-11) from the outage period stop date (blocks 32-34). Enter the result in this block.
14	Preprinted.
18-21	Enter NONE. There will be no container for the outage period.
27-30	Local time outage period started. This time will be the same as the time SIP ended for the previous sample run.
32-34	Julian date outage period stopped. The date the new sample run started following the outage period.
36-39	Local time the outage period ended. The time the new sample run started following the outage period.

## c. Section III (Periodic Readings). Leave blank.

d. Section IV (Remarks). Enter the reason for the inoperative condition and all the maintenance actions taken during the outage period.

5-3. CEN Form 5 Distribution. Distribute all completed CEN Forms 5 as follows. Consult the Attachment for mailing addresses.

- a. Original copy to HQ where operational data are consolidated and analyzed.
- b. One copy to Depot to be used in system standardization and quality control.
- c. One copy to the Parent Unit for review, quality control, and file.
- d. One copy with the sample container. Sample registry number, if used, is not required on this copy.
- e. One copy for unit file.

5-4. CEN Form 5 Corrections. Corrections to CEN Forms 5 will be submitted to Parent Unit.

#### OFFICIAL

#### SUMMARY OF CHANGES

Deleted paragraph on historical record from chapter 1. Deleted paragraph on laboratory reports from Chapter 3. Simplified equipment status reporting procedures. Requires Equipment Locations to report only to their Parent Unit. Deleted all references to Annex.

Figure 5-1. CEN Form 5, Operational Log and Data Sheet.

OPERATIONAL LOG AND DATA SHEET																																																																															
I. IDENTIFICATION DATA						II. DATA FOR AUTOMATION																																																																									
SERIAL NO:	UNIT 03	COLDHEAD 48	DEWAR 05	<table border="1"> <tr><td>1</td><td>5</td><td>8</td><td>0</td><td>0</td><td>8</td><td>6</td><td>1</td><td>8</td><td>1</td><td>1</td><td>G</td><td>0</td><td>8</td><td>5</td><td>6</td></tr> <tr><td>1</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>13</td><td>14</td><td>18</td><td>19</td><td>20</td><td>21</td></tr> <tr><td>0</td><td>9</td><td>0</td><td>0</td><td>1</td><td>8</td><td>2</td><td>0</td><td>9</td><td>0</td><td>C</td><td>1</td><td>2</td><td></td><td></td><td></td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td>32</td><td>33</td><td>34</td><td>36</td><td>37</td><td>38</td><td>39</td><td></td><td>77</td><td>78</td><td>79</td><td>80</td></tr> </table>												1	5	8	0	0	8	6	1	8	1	1	G	0	8	5	6	1	3	4	5	6	7	8	9	10	11	13	14	18	19	20	21	0	9	0	0	1	8	2	0	9	0	C	1	2				27	28	29	30	32	33	34	36	37	38	39		77	78	79	80
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27	28	29	30	32	33	34	36	37	38	39		77	78	79	80																																																																
DATE SAMPLE MAILED:	1 July 86																																																																														
SAMPLE REGISTRY NO:																																																																															
III. PERIODIC READINGS																																																																															
JULIAN	AIR PRESS	COMPRESSOR PRESSURE		FREON PRESS	AIR FLOW	HOUR METER	EQUIPMENT TEMPERATURES										AMBIENT TEMP (°F)	VISUAL CHECK	INIT																																																												
		H-M-1	H-M-2				H-M-3	F-M-4	S-M-6	M-5	TC-1	TC-2	TC-3	TC-4	TC-5	TC-6				TC-7	TC-8	TC-9																																																									
DATE/TIME	S-M-1	H-M-2	H-M-3	F-M-4	S-M-6	M-5	TC-1	TC-2	TC-3	TC-4	TC-5	TC-6	TC-7	TC-8	TC-9																																																																
181/1530	-2.6	125	325	525	8.5	16270.4	5	64	50	70	85	78	67	61	62	77	OK	BS																																																													
181/1645	0.0	125	325	515	0.0	16271.7	-18	64	61	70	84	77	66	61	62	76	OK	BS																																																													
181/2255	-2.6	125	325	525	8.5	16276.7	4	64	51	71	85	78	67	61	62	76	OK	BS																																																													
182/0855	+3.0	228	228	530	0.0	16286.7	52	60	60	60	61	60	63	61	62	75	OK	BS																																																													
IV. REMARKS (REVERSE SIDE MAY BE USED IF NEEDED)																																																																															
181/1645L-1755L: No flow or vacuum during operational check. Replaced *vacuum pump and fuse. Defective pump sent to Depot.																																																																															
Operator Status: *Bert Smith, SSgt, 12 July 88; Ernie Jones, Sgt, 6 November 89																																																																															
Container Status: 64																																																																															
PREVIOUS EDITIONS WILL BE USED UNTIL STOCK IS EXHAUSTED.																																																																															